WHAT WE CLAIM IS:

1. A method of preparing a photographic solid fine-grain dispersion, the method comprising the steps of:

successively bringing a slurry of a water-insoluble photographically useful compound in a grinding chamber of a dispersing machine, which chamber is filled with media,

allowing the compound to contact the media in the grinding chamber, to produce fine grains of the compound successively,

successively separating the media from the compound by centrifugal force, and

taking the compound out of the grinding chamber,

wherein the bulk density of the media is 4.0 g/cm^3 or more, the Vickers hardness thereof is 10 GPa or more, the breaking tenacity thereof is 5 $MPa \cdot m^{1/2}$ or more, and the average grain size thereof is 0.3 mm or less.

2. The method of preparing a photographic solid fine-grain dispersion as claimed in claim 1, wherein the member that contacts the media of the dispersing machine, is composed of a material selected from a ceramic whose main component is substantially a zirconia or an alumina, a polyurethane, a polytetrafluoroethylene, and a polyethylene.

3. The method of preparing a photographic solid fine-grain dispersion as claimed in claim 1, wherein the dispersion machine has such a mechanism that the same comprises a cylindrical container having a feed port and a discharge port for slurry, a screen covering the discharge port and projecting inward a dispersing container, and a rotatable shaft equipped with a plurality of stirrers; wherein at the feed port side of the cylindrical container, the grinding chamber filled with the media is arranged, and at the discharge port side of the cylindrical container, a media-separating chamber in which substantially no media exist, is arranged, respectively; wherein a disc-like rotor mounted on the rotatable shaft at the closest side to the discharge port is equipped with a stirrer member, the tip of which extends to the vicinity of a lateral face at the discharge port side of the screen; wherein, by rotation of the stirrer member, centrifugal force is applied to the media introduced into the separating chamber, and thereby the media is returned to the grinding chamber.

4. The method of preparing a photographic solid fine-grain dispersion as claimed in claim 3, wherein the member that contacts the media of the dispersing machine,

is composed of a material selected from a ceramic whose main component is substantially a zirconia or an alumina, a polyurethane, a polytetrafluoroethylene, and a polyethylene.

5. The method of preparing a photographic solid fine-grain dispersion as claimed in claim 1, wherein the dispersing machine comprises a grinding chamber filled with beads and having a feed port and a discharge port for slurry, a rotatable shaft equipped with an stirrer, and a media-separating chamber containing substantially no media, which chamber is separated by a wall from the grinding chamber and which chamber is installed with an impeller that applies by rotation a centrifugal force to the media introduced into the separating chamber to return the media to the grinding chamber taking out the slurry through a discharge passage formed in the rotatable shaft.

6. The method of preparing a photographic solid fine-grain dispersion as claimed in claim 5, wherein the member that contacts the media of the dispersing machine, is composed of a material selected from a ceramic whose main component is substantially a zirconia or an alumina, a polyurethane, a polytetrafluoroethylene, and a polyethylene.

7. A photographic solid fine-grain dispersion, which is obtained by a preparation method comprising the steps of:

successively bringing a slurry of a water-insoluble photographically useful compound in a grinding chamber of a dispersing machine, which chamber is filled with media,

allowing the compound to contact the media in the grinding chamber, to produce fine grains of the compound successively,

successively separating the media from the compound by centrifugal force, and

taking the compound out of the grinding chamber,

wherein the bulk density of the media is 4.0 g/cm^3 or more, the Vickers hardness thereof is 10 GPa or more, the breaking tenacity thereof is 5 $MPa \cdot m^{1/2}$ or more, and the average grain size thereof is 0.3 mm or less.

8. The photographic solid fine-grain dispersion as claimed in claim 7, wherein, in the preparation method, the dispersion machine has such a mechanism that the same comprises a cylindrical container having a feed port and a discharge port for slurry, a screen covering the discharge port and projecting inward a dispersing container, and a rotatable shaft equipped with a plurality of stirrers;

wherein at the feed port side of the cylindrical container, the grinding chamber filled with the media is arranged, and at the discharge port side of the cylindrical container, a media-separating chamber in which substantially no media exist, is arranged, respectively; wherein a disc-like rotor mounted on the rotatable shaft at the closest side to the discharge port is equipped with a stirrer member, the tip of which extends to the vicinity of a lateral face at the discharge port side of the screen; wherein, by rotation of the stirrer member, centrifugal force is applied to the media introduced into the separating chamber, and thereby the media is returned to the grinding chamber.

9. The photographic solid fine-grain dispersion as claimed in claim 7, wherein, in the preparation method, the dispersing machine comprises a grinding chamber filled with beads and having a feed port and a discharge port for slurry, a rotatable shaft equipped with an stirrer, and a media-separating chamber containing substantially no media, which chamber is separated by a wall from the grinding chamber and which chamber is installed with an impeller that applies by rotation a centrifugal force to the media introduced into the separating chamber to return the media to the grinding chamber taking out the slurry through a

discharge passage formed in the rotatable shaft.

10. The photographic solid fine-grain dispersion as claimed in claim 7, wherein, in the preparation method, the member that contacts the media of the dispersing machine, is composed of a material selected from a ceramic whose main component is substantially a zirconia or an alumina, a polyurethane, a polytetrafluoroethylene, and a polyethylene.

11. The photographic solid fine-grain dispersion as claimed in claim 7, wherein the media and/or foreign matters resulting from the dispersing machine are contained in an amount of 100 ppm or less, in terms of the weight ratio in the dispersion.

12. The photographic solid fine-grain dispersion as claimed in claim 7, wherein the water-insoluble photographically useful compound is a compound represented by general formula (I):

General formula (I)

$$D—(X)_y$$

wherein D represents a residue of a compound having a chromophore; X represents a dissociating hydrogen atom, or a group having a dissociating hydrogen atom; and y

represents an integer of 1 to 7.

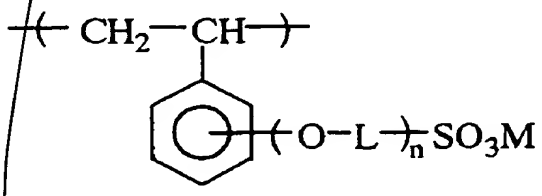
13. The photographic solid fine-grain dispersion as claimed in claim 7, which further contains a water-soluble synthetic high-molecular compound.

14. The photographic solid fine-grain dispersion as claimed in claim 13, wherein the synthetic high-molecular compound is an anionic high molecule.

15. The photographic solid fine-grain dispersion as claimed in claim 14, wherein the number-average molecular weight of the high-molecular compound is in the range of 2000 to 12000.

16. The photographic solid fine-grain dispersion as claimed in claim 15, wherein the high-molecular-weight compound is a compound containing a recurring unit of a monomer represented by general formula (II):

General formula (II)



wherein L represents an aliphatic divalent group having 1 to 50 carbon atoms, M represents a hydrogen atom or a monovalent cation, and n represents 0 or 1.

17. A coating composition for a silver halide photographic light-sensitive material, which composition comprises a photographic solid fine-grain dispersion that is obtained by a preparation method comprising the steps of:

successively bringing a slurry of a water-insoluble photographically useful compound in a grinding chamber of a dispersing machine, which chamber is filled with media,

allowing the compound to contact the media in the grinding chamber, to produce fine grains of the compound successively,

successively separating the media from the compound by centrifugal force, and

taking the compound out of the grinding chamber,

wherein the bulk density of the media is 4.0 g/cm^3 or more, the Vickers hardness thereof is 10 GPa or more, the breaking tenacity thereof is 5 $MPa \cdot m^{1/2}$ or more, and the average grain size thereof is 0.3 mm or less.

18. The coating composition as claimed in claim 17, wherein, in the preparation method, the dispersion machine

has such a mechanism that the same comprises a cylindrical container having a feed port and a discharge port for slurry, a screen covering the discharge port and projecting inward a dispersing container, and a rotatable shaft equipped with a plurality of stirrers; wherein at the feed port side of the cylindrical container, the grinding chamber filled with the media is arranged, and at the discharge port side of the cylindrical container, a media-separating chamber in which substantially no media exist, is arranged, respectively; wherein a disc-like rotor mounted on the rotatable shaft at the closest side to the discharge port is equipped with a stirrer member, the tip of which extends to the vicinity of a lateral face at the discharge port side of the screen; wherein, by rotation of the stirrer member, centrifugal force is applied to the media introduced into the separating chamber, and thereby the media is returned to the grinding chamber.

19. The coating composition as claimed in claim 17, wherein, in the preparation method, the dispersing machine comprises a grinding chamber filled with beads and having a feed port and a discharge port for slurry, a rotatable shaft equipped with an stirrer, and a media-separating chamber containing substantially no media, which chamber

is separated by a wall from the grinding chamber and which chamber is installed with an impeller that applies by rotation a centrifugal force to the media introduced into the separating chamber to return the media to the grinding chamber taking out the slurry through a discharge passage formed in the rotatable shaft.

20. The coating composition as claimed in claim 17, wherein, in the preparation method, the member that contacts the media of the dispersing machine, is composed of a material selected from a ceramic whose main component is substantially a zirconia or an alumina, a polyurethane, a polytetrafluoroethylene, and a polyethylene.

21. The coating composition as claimed in claim 17, wherein the water-insoluble photographically useful compound is a compound represented by general formula (I):

General formula (I)

$$D—(X)_y$$

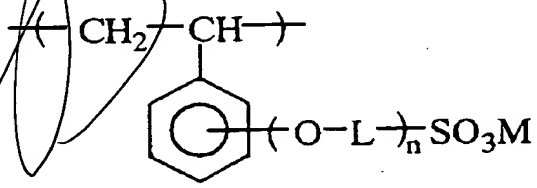
wherein D represents a residue of a compound having a chromophore; X represents a dissociating hydrogen atom, or a group having a dissociating hydrogen atom; and y represents an integer of 1 to 7.

22. The coating composition as claimed in claim 17,

wherein the photographic solid fine-grain dispersion further contains a water-soluble synthetic high-molecular compound that is an anionic high molecule.

23. The coating composition as claimed in claim 22, wherein the high-molecular-weight compound is a compound containing a recurring unit of a monomer represented by general formula (II):

General formula (II)



wherein L represents an aliphatic divalent group having 1 to 50 carbon atoms, M represents a hydrogen atom or a monovalent cation, and n represents 0 or 1.

24. A silver halide photographic light-sensitive material having at least one light-sensitive silver halide emulsion layer on a support, which comprises a photographic solid fine-grain dispersion which is obtained by a preparation method comprising the steps of:

successively bringing a slurry of a water-insoluble

photographically useful compound in a grinding chamber of a dispersing machine, which chamber is filled with media,

allowing the compound to contact the media in the grinding chamber, to produce fine grains of the compound successively,

successively separating the media from the compound by centrifugal force, and

taking the compound out of the grinding chamber,

wherein the bulk density of the media is 4.0 g/cm^3 or more, the Vickers hardness thereof is 10 GPa or more, the breaking tenacity thereof is 5 $MPa \cdot m^{1/2}$ or more, and the average grain size thereof is 0.3 mm or less.

25. The silver halide photographic light-sensitive material as claimed in claim 24, wherein, in the preparation method, the dispersion machine has such a mechanism that the same comprises a cylindrical container having a feed port and a discharge port for slurry, a screen covering the discharge port and projecting inward a dispersing container, and a rotatable shaft equipped with a plurality of stirrers; wherein at the feed port side of the cylindrical container, the grinding chamber filled with the media is arranged, and at the discharge port side of the cylindrical container, a media-separating chamber in which substantially no media exist, is arranged,

respectively; wherein a disc-like rotor mounted on the rotatable shaft at the closest side to the discharge port is equipped with a stirrer member, the tip of which extends to the vicinity of a lateral face at the discharge port side of the screen; wherein, by rotation of the stirrer member, centrifugal force is applied to the media introduced into the separating chamber, and thereby the media is returned to the grinding chamber.

26. The silver halide photographic light-sensitive material as claimed in claim 24, wherein, in the preparation method, the dispersing machine comprises a grinding chamber filled with beads and having a feed port and a discharge port for slurry, a rotatable shaft equipped with an stirrer, and a media-separating chamber containing substantially no media, which chamber is separated by a wall from the grinding chamber and which chamber is installed with an impeller that applies by rotation a centrifugal force to the media introduced into the separating chamber to return the media to the grinding chamber taking out the slurry through a discharge passage formed in the rotatable shaft.

27. The silver halide photographic light-sensitive material as claimed in claim 24, wherein, in the

preparation method, the member that contacts the media of the dispersing machine, is composed of a material selected from a ceramic whose main component is substantially a zirconia or an alumina, a polyurethane, a polytetrafluoroethylene, and a polyethylene.

28. The silver halide photographic light-sensitive material as claimed in claim 24, wherein the water-insoluble photographically useful compound is a compound represented by general formula (I):

General formula (I)

$$D—(X)_y$$

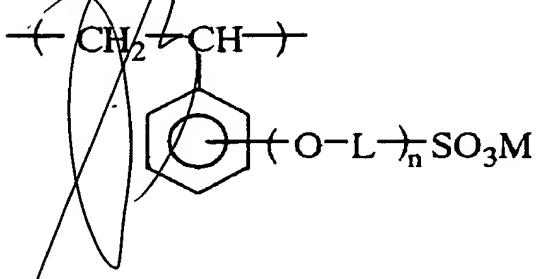
wherein D represents a residue of a compound having a chromophore; X represents a dissociating hydrogen atom, or a group having a dissociating hydrogen atom; and y represents an integer of 1 to 7.

29. The silver halide photographic light-sensitive material as claimed in claim 24, wherein the photographic solid fine-grain dispersion further contains a water-soluble synthetic high-molecular compound that is an anionic high molecule.

30. The silver halide photographic light-sensitive material as claimed in claim 29, wherein the high-

molecular-weight compound is a compound containing a recurring unit of a monomer represented by general formula (II):

General formula (II)



wherein L represents an aliphatic divalent group having 1 to 50 carbon atoms, M represents a hydrogen atom or a monovalent cation, and n represents 0 or 1.

add B) add D)